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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/782,199	02/14/2001	Akira Yamaguchi	Q62086	9852

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SUGHRUE, MION, ZINN, MACPEAK & SEAS
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EXAMINER
NGUYEN, HOAN C

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 04/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/782,199	YAMAGUCHI, AKIRA	
	Examiner	Art Unit	
	HOAN C. NGUYEN	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) 7-18 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Species A and subspecies I (claims 1-6) in Paper No. 6 is acknowledged.

Applicant's arguments regarding the restriction requirement have been considered; however, the traversal was on the grounds that there is no serious burden on the Examiner in examining all of claims 1-18 together. This is not found persuasive since the incident light manipulation is different between different Species, thus the efficiency and uniformity of the light output may be different for different choice of designs, which relates to species.

Furthermore, Applicant fails to show the obvious vary between Species.

Therefore, the requirement is deemed proper and is considered to be an election ***without*** traverse.

Claims 7-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to the nonelected inventions and species, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishihara (US5946100A).

In regard to claims 1-4, Ishihara teaches (Figs. 6-7) a light diffusing plate comprising:

- a lens substrate;
- a plurality of microlenses disposed on a surface of said lens substrate;
- a plurality of light exit areas (pinhole), each having a circular form a center of which is coincident with an optical axis of each of said plurality of microlenses;
- a light shield layer
    - formed on another surface of the lens substrate reverse to said plurality of microlenses,
    - covering other area than said plurality of light exit areas,

wherein

- when a refractive index of said lens substrate is represented by n; a thickness of said lens substrate by t; a diameter of each of said plurality of light exit areas by R; and a size of each of said plurality of microlenses by Sr, the following formula is satisfied (see attachment for deriving the formula using principle of the geometric optics):

$$Sr \geq .2t \bullet \tan\Theta. + R \text{ (with the proviso that } \Theta = \sin^{-1}(1/n) .$$

- said plurality of microlenses are arranged in a closest packing state or in hexagonal form when viewed from the direction of the optical axis and are arranged in a hexagonal close-packed state (claim 2).
- the light diffusing plate further comprising an anti-reflective layer formed at a light exit side than said light shield layer, and covering other area than said plurality of light exit areas (claim 3).
- microlenses made of glass, therefore the refractive index of said lens substrate is between 1.4 and 2 (claim 4).

In regard to claim 6, Ishihara teaches (Figs. 5-7) a rear projection apparatus comprising

- a rear projection engine for issuing an image-bearing diffused light
- a screen on which the image-bearing diffused light is incident and an image of the image-bearing diffused light is displayed, said screen including a Fresnel lens
- a light diffusing plate,

wherein said light diffusing plate comprises

- a lens substrate;
- a plurality of microlenses disposed on a surface of said lens substrate;
- a plurality of light exit areas, each having a circular form a center of which is coincident with an optical axis of each of said plurality of microlenses;

- a light shield layer formed on another surface of the lens substrate reverse to said plurality of microlenses, and covering other area than said plurality of light exit areas,

wherein when a refractive index of said lens substrate is represented by n; a thickness of said lens substrate by t; a diameter of each of said plurality of light exit areas by R; and a size of each of said plurality of microlenses by Sr, the following formula is satisfied (see attachment for deriving the formula using principle of the geometric optics): $Sr \geq .2t \bullet \tan\Theta . + R$ (with the proviso that $\Theta = \sin^{-1}(1/n)$

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinohara et al. (US6231200B1) in view of Ishihara (US5946100A).

Shinohara et al. teach (Fig. 8) a liquid crystal display apparatus comprising:

- a liquid crystal display panel;
- a backlight section for causing a collimated light to be incident on said liquid crystal display panel.

However, Shinohara et al. fails to disclose the a light diffusing plate for diffusing an image-bearing collimated light which has passed through said liquid crystal display panel, wherein said light diffusing plate comprises features disclosed in claim 1.

Ishihara teaches the a light diffusing plate for diffusing an image-bearing collimated light which has passed through said liquid crystal display panel, wherein said light diffusing plate comprises features disclosed in claim 1 for improving array confocal image system.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display apparatus as Shinohara et al. disclosed with a light diffusing plate for diffusing an image-bearing collimated light which has passed through said liquid crystal display panel, wherein said light diffusing plate comprises features disclosed in claim 1 for improving array confocal image system.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Kobayashi et al. (US6294313B1) disclose a pattern forming method of manufacturing the microlens.

Lewin (US4703405A) discloses a glare reducing lens made of refractive lens member for use with a luminaire is constructed to minimize high angle glare.

Yamasaki et al. (US4509824A) discloses a plate lens comprising a transparent base having two flat surfaces and having a plano-convex lens portion which is formed integrally with the transparent base, which has a refractive index greater than that of the transparent base and which has a substantially semicircular or circular section in a direction perpendicular to the flat surfaces of the transparent base.

Watanabe et al. (US6295107B1) disclose a liquid crystal display with shielding layer for passing parallel rays of light into micro-lens array.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN
Examiner
Art Unit 2871

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March 28, 2003

TOAN TON
PRIMARY EXAMINER